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ABSTRACT

The processing of incoming psychological information along the network, or schemata, of self-knowledge was studied to determine the convergent and discriminant validity of the patterns of schemata-specific response latencies. Fifty-three female and 52 male university students completed the Basic Personality Inventory (BPI). BPI scales assess measure of neurotic tendencies and aspects of sociopathic behavior. Reaction times were collected through responses on a computer. Negative correlations were obtained between scale scores and mean latencies for endorsing relevant items. Positive correlations were found between scale scores and mean latencies for rejecting relevant items. Scale scores were relatively independent of the latencies for processing scale-irrelevant items. This effect pattern substantiates the idea of item response in terms of self-schemata and supports the construct validity of dimension specific reaction times. (SLD)

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Reaction Time and Self-Report Psychopathological Assessment: Convergent and Discriminant Validity

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Reaction Time and Self-Report Psychopathological Assessment: Convergent and Discriminant Validity

Abstract

This study examined the relationship between position on various dimensions of psychopathology and the speed of processing information associated with each of these dimensions. Negative correlations were obtained between scale scores and mean latencies for endorsing relevant items, and positive correlations were found between scale scores and mean latencies for rejecting relevant items. Further, scale scores were relatively independent of the latencies for processing scale-irrelevant items. This pattern of convergent and discriminant relationships supported the construct validity of dimension-specific reaction times and substantiated the conceptualization of the item response process as employing a comparison to self-schemata.

Reaction Time and Self-Report Psychopathological Assessment:

Convergent and Discriminant Validity

When responding to a personality or psychopathology questionnaire, how does an individual decide whether to endorse or reject a given test item? Recently, theorists have postulated that the personality test item may be compared to an integrated network of self-knowledge derived from past behavior, memories, goals, etc. Processing incoming personality information along this network or schemata will systematically influence the speed of responding (Ebbesen & Allen, 1979; Erdle & Lalonde, 1986; Kuiper, 1981; Kuiper & Derry, 1981; Markus & Smith, 1981). For example, individuals possessing a depression schemata will endorse depressive items more quickly and reject depressive items more slowly than individuals who lack a depressive schemata. Presumably, the processing of schemata consistent items is enhanced because the relevant information is already organized for the comparison. Schemata inconsistent items may be processed more slowly because they must be evaluated against the entire, elaborate schemata. The decreased latencies of endorsed items and the increased latencies of rejected items should be in evidence only for items which tap the schemata. The speed of endorsing and rejecting schemata-irrelevant items should not show differential relationships to the schemata. This study will extend previous research in the area of schemata and the speed of processing personality information in two ways. First, the convergent and discriminant validity of the pattern

of schemata-specific response latencies will be investigated. Although it follows from others' work that relevant and irrelevant items will not be similarly related to a schemata, this has not been examined empirically. Second, this study will extend previous findings on personality items reflecting dimensions of normal personality to items related to psychopathology.

Method

Subjects and Material

The sample comprised 105 university students (53 females; 52 males). Mean age of the subjects was 22.69 years. All subjects were paid for their participation. Stimulus material consisted of the Basic Personality Inventory (BPI; Jackson, 1976). The BPI is a 12-scale, 240-item, true/false, self-report inventory assessing relatively independent components of psychopathology similar to those underlying the traditional Minnesota Multiphasic Personality Inventory clinical scales. BPI scales (Table 1) assess measures of neurotic tendencies with scales of Hypochondriasis, Depression, Anxiety, Social Introversion, and Self-Depreciation; assess dimensions of psychoticism using scales of Persecutory Ideas, Thinking Disorder, and Deviation; and assess aspects of sociopathic behavior with scales of Denial, Interpersonal Problems, Alienation, and Impulse Expression. Each BPI item is keyed on only one scale, and each BPI scale consists of 20 items and is balanced for direction of keying.

Procedure

For the present study, all data were collected using a Zenith 148 microcomputer with a monochrome monitor. Subjects were first familiarized with the microcomputer and then computer administered the BPI. BPI responses required only the use of the "T" (true), "F" (false) and "R" (redo) keys on the keyboard. Questionnaire items were presented sequentially; the response to one question cleared the screen and prompted presentation of the subsequent question. Subjects were informed that if they wished to correct a response to an item, they could redo the immediately preceding question by depressing the "R" key. Respondents were not informed that their response latencies for each question were being automatically recorded by the computer.

Results

Initially, reaction times were standardized within each subject. Such a procedure is designed to remove statistically a large general factor attributable to individual differences in general speed of responding. Next, reaction times were standardized within each item across subjects. This standardization statistically adjusts reaction times for factors associated with item differences (e.g., item length). Then, for every subject on each of the 12 BPI scales, mean reaction times for endorsed items and for rejected items were calculated. Further, given the bipolar nature of each of the BPI scales, a composite mean reaction time for each scale was computed by subtracting the mean reaction time of the rejected items from

that for the endorsed items. An irrelevant mean reaction time for each BPI scale was also calculated by computing the average across the other 11 BPI scales of the difference between mean endorsed and rejected item reaction times. Each of these computed values was then correlated across respondents with subjects' scores on corresponding scales (see Table 2). Results indicated a significant association between BPI scale scores and corresponding scale mean reaction times for endorsed items (mean $r = -.14$, $p < .01$). That is, higher scores on a BPI scale were associated with faster response times for those items endorsed on that scale. As predicted, in a complementary fashion, slower response times for rejected items on a BPI scale were significantly related to higher scores on that BPI scale (mean $r = .33$, $p < .01$). Figure 1 shows these relationships for the Impulse Expression scale. The complementary nature of the effects for endorsed and rejected items supported the appropriateness of reflecting the mean reaction time for rejected items and then combining that with the mean reaction time for endorsed items. As hypothesized, this more reliable composite yielded scores showing significant convergence with corresponding BPI scale scores (mean $r = -.25$, $p < .01$). For purposes of evaluating the discriminant validity of this composite, for each BPI scale, mean irrelevant composites based on the other 11 BPI scales were generated in a similar fashion. Although these irrelevant composites showed some tendency (mean $r = -.11$, $p < .01$) to correlate with noncorresponding BPI scale

scores, possibly as a function of a general psychopathology or negative desirability factor associated with the BPI, this effect was significantly smaller than for the composite scores derived from a BPI scale's corresponding items (paired $t(11) = 4.45$, $p < .01$).

Discussion

This study examined the relationship between positions on various dimensions of psychopathology and scale-specific reaction times for endorsed and rejected items. Negative associations were found between BPI scale scores and mean response latencies for endorsed scale-relevant items. Positive correlations were obtained between scores on BPI scales and mean reaction times for rejected scale-relevant items. Further, these effects were shown to possess discriminant validity in that scale scores were relatively independent of the latencies for scale-irrelevant items. This pattern of effects substantiates the conceptualization of the item response process in terms of a comparison to self-schemata. Further, it extends research on decision mechanisms and schemata into the domain of structured psychopathological test statements. Finally, it suggests the possibility that the computerized assessment of psychopathology may have the potential to provide concomitants to item responses that have relevant construct validity (i.e., convergent and discriminant validity) for various dimensions of abnormal behavior.

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Table 1

Basic Personality Inventory Scale Descriptions[1]

Scale	Description of High Scorer
Hypochondriasis	Frequently thinks he/she is ill. Complains regularly of peculiar pains or bodily dysfunctions. Discusses such topics, frequently revealing a preoccupation with his/her complaints.
Depression	Inclines to be down-hearted and show extreme despondency. Considers himself/herself to be inadequate. May be listless, remote and preoccupied. Looks at his/her future pessimistically.
Denial	Lacks insight into his/her feelings and the causes of his/her behavior. Avoids unpleasant, exciting, or violent topics. Relatively unresponsive emotionally.
Interpersonal Problems	Is often extremely annoyed by little inconveniences, frustrations, or disappointments. Will frequently be uncooperative, disobedient, and resistant when faced with rules and regulations. Reacts against discipline and criticism.
Alienation	Expresses attitudes markedly different from common social codes. Is prone to depart from the truth and behave in an unethical and untrustworthy manner. Feels little or no guilt.
Persecutory Ideas	Believes that certain people are against him/her and are tring to make his/her life difficult and unpleasant.

Table 1 (continued)

Basic Personality Inventory Scale Descriptions

Scale	Description of High Scorer
Anxiety	Easily scared. Little things, even an idea can throw him/her into a frenzy of anxiety. Afraid of novelty and of the possibility of physical or interpersonal danger.
Thinking Disorder	Is markedly confused, distractable, and disorganized. Cannot remember even simple things from day to day. Reports feelings of living in a dream-like world, that people appear different to him/her and that he/she feels different from them.
Impulse Expression	Lacks ability to think beyond the present and to consider the consequences of actions. Is prone to undertake risky and reckless actions. Inclined to behave irresponsibly. Finds routine tasks boring.
Social Introversion	Avoids people generally. Has few friends and doesn't say much to them. Seems to be uncomfortable when around others. Prefers asocial activities.
Self Depreciation	Degrades himself/herself as being worthless, unpleasant, and undeserving. Generally expresses a low opinion of himself/herself and refuses credit for any accomplishment.
Deviation	Displays behavior patterns very different from most people's. Admits to unusual and pathological characteristics.

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Table 2

Correlations between BPI Scale Scores and Corresponding Scale Mean Standardized Reaction Times

BPI Scale	Mean of Endorsed Items (E)	Mean of Rejected Items (R)	E - R	Irrelevant[1] E - R
Hypochondriasis	-.20*	.18*	-.27**	-.11
Depression	-.11	.57**	-.30**	-.11
Denial	-.05	.40**	-.22*	.01
Interpersonal Problems	-.35**	.15	-.38**	-.11
Alienation	-.19*	.51**	-.34**	-.12
Persecutory Ideas	-.10	.30**	-.24**	-.13
Anxiety	-.15	.23**	-.25**	-.08
Thinking Disorder	-.10	.44**	-.25**	-.18
Impulse Expression	-.34**	.22*	-.38**	-.11
Social Introversion	-.05	.26**	-.16	-.07
Self Depreciation	-.10	.24**	-.18	-.08
Deviation	.09	.31**	-.04	-.18
MEAN[2]	-.14**	.33**	-.25**	-.11**
SD	.13	.16	.10	.05

[1] Irrelevant E - R scores were based on the mean, across the other 11 BPI scales, of the difference between mean reaction times on endorsed and rejected items.

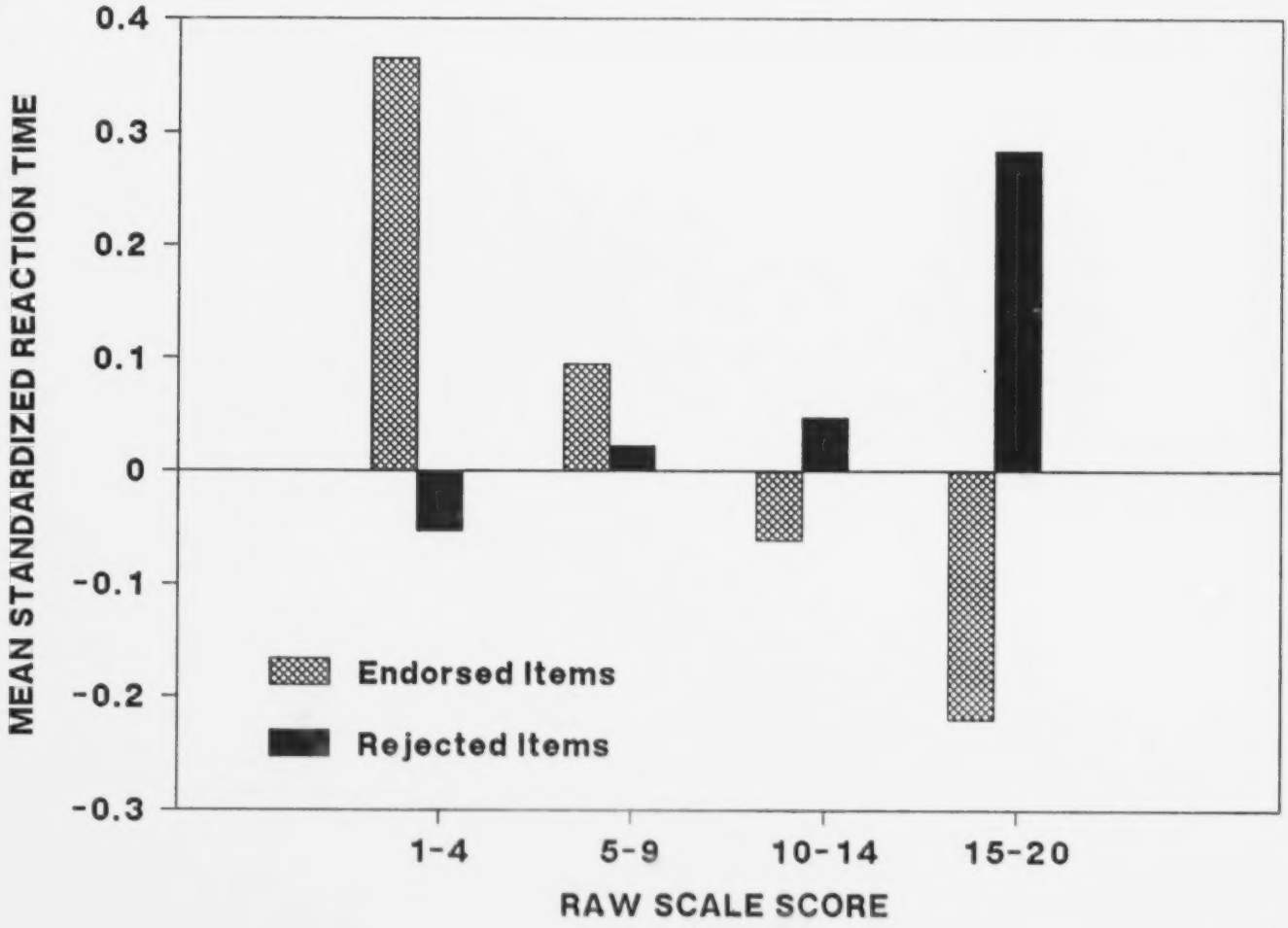
[2] Significance of means was evaluated in relation to their standard error.

* $p < .05$

** $p < .01$

Figure Caption

Figure 1. Mean Standardized Reaction Time as a Function of Scale Score (Impulse Expression Scale)


0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
MEAN STANDARDIZED REACTION TIME
Endorsed Items
Rejected Items
1-4
5-9
10-14
15-20
RAW SCALE SCORE